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Notice of Allowability

Application No.

10/735,045

Examiner

Jaworski Francis J.

Applicant(s)

MAST ET AL

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE req/IDS 7-15-05.
2. ☒ The allowed claim(s) is/are 1-21.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

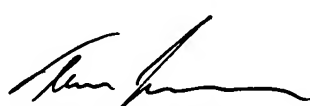
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 7-15-05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.


 Francis J. Jaworski
 Primary Examiner

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

With respect to the Information disclosure Statement filed concurrent with the Request for Continued Examination on July 15, 2005, page last of that document was previously treated in the allowance mailing of April 25, 2005. Specifically, Maass-Moreno et al (Parts I and II) are directed to categorizing the ultrasound A-mode pulse-echo delay response behavior with respect to changed sound velocity distribution due to thermal expansion from focused heating, and to measurement of the accompanying time-shift by cross-correlation technique in the frequency domain using the cross-spectral density function phase angle to represent time delay, and Seip et al/Simon, et al are directed respectively to use of the echo delay line shift to control a multi-point temperature controller or to provide a cross-correlation determination of temperature distribution. Among the patent citations, the most relevant included Shah/Whayne et al directed to direct temperature measurements during intra-discal lesioning or pulmonary approach endocardial ablation; Fujimoto to providence of an energy optimization index based on heating wave intensity time product and center frequency for a pre-determined deposition of optimal thermal degeneration energy; Lizzi et al to difference imaging to enhance non-linearities associated with ongoing thermal destruction of tissue.

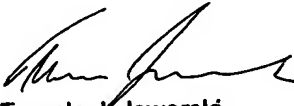
None of the prior art alone or in combination teaches or suggests a method for pulse-echo ultrasonic anatomic tissue temperature rise mapping including inter alia the production of complex analytic signals from first and second imaging signals with

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computation of depth-dependent delay from the conjugate product of the first and second analytic signals together with the creation of an image showing such temperature rise and/or in conjunction with intermediate frame averaging or conjugate product averaging, or with further generation of an echo-strain map from the slope of the depth-dependent delay.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication should be directed to Jaworski Francis J. at telephone number 571-272-4738.



Francis J. Jaworski
Primary Examiner

FJJ:fjj

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